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79. *Oleandra nodosa*, Presl.
80. *Cyathea*:—not identified, and possibly new.
81. *Polypodium serrulatum*, Mettenius.
84. *Dicksonia cicutaria*, Swartz.
86. *Hymenophyllum ciliatum*, Swartz.
89. *Lindsœa stricta*, Dryander.
93. *Acrostichum flaccidum*, Fee.
95. *Davallia Saccoloma*, Sprengel.
98. *Phegopteris flavo-punctata*, Fee.
108. *Selaginella*. (not recognized.)
110. *Lindsœa trapeziformis*, Dryander, var. *falcata*, Baker.
114. *Oleandra neriiformis*, Cav.

LEAVES OF DARLINGTONIA CALIFORNICA AND THEIR TWO SECRETIONS.—Through the kindness of Dr. Gray we are permitted to publish the following interesting communication from Mrs. R. M. Austin, of Pratteville, Plumas Co., Cal.

"Found the sweet secretion, or lure, on all the new leaves of Darlingtonia having the orifices of the hoods open, and captured insects in the liquid at the bottom of the tubes. The sweet secretion was confined to the inner and rough portion of the hoods, the rim or fold around the orifices, and on the outside of the hoods, corresponding in extent to the rough inner part, on both sides of the "fish-tails," and extending down the wing to where it makes the outward bend. This bend can be seen in dried specimens. In no instance have I found the lure below this. I was fortunate in finding about a dozen new leaves having the orifices still closed, and the process of secreting the clear liquid going on. I noted carefully the places of secretion and manner, as well as I could. The liquid is poured, or, apparently, oozes out of the *lower or hairy* part of the tubes, the *rough* part of the hoods, and where the translucent *dots* are on the petioles there are minute globules of clear liquid. The little globules are not easily broken up or separated, but when I would touch them with the point of a pin or a pine leaf, would roll down over the velvety part of the tube, as little globules of mercury do on glass. I tried holding the tubes horizontally, and touching them. In this position the drops would move about and not be broken up. I then rubbed my fingers lightly over the velvety portions of the tubes, thereby removing the fine bloom that covers this portion of the tubes. Now, when I would touch the little drops with my pin they would be broken up and wet the surface. The velvety part of the tubes are always dry and clean, in new and old leaves.

I did not find any of the white larvæ in the leaves having closed orifices, but there were many in the new leaves having the orifices open, and also in the old leaves of last year. Many of the old leaves were pretty well smeared with the lure, which must have been secreted this season, as it could not have remained upon them during the heavy rain and snow storms of last winter."

THE BIG TREES, BY J. G. LEMMON [Concluded from Oct. No.].—*Leviathan*, another prostrate monster, is about the same size, being 270 feet long, and 14 in diameter, but his body is not cut across or so broken as to reveal his rings.

The Father of the Forest.—Armed with the rule, derived as above stated, on the third day I approached the shattered trunk of this famous tree, fabled to have sprung from the earth soon after the deluge of Noah, over 4,000 years ago.

This huge patriarch has been shamefully overrated every way—his size given at 40 feet in diameter and his length at 450 feet. Exact measurement shows the diameter as only 18 feet at a distance of six feet from his roots, and his length about 300 feet. His trunk is broken or burned out in places, thus exposing cross sections where the rings of annual growth may be examined. With a hatchet and sharp knife I smoothed spaces of wood in three places, widely removed from each other along the trunk, but each one-third of the distance between the bark and heart, and thereon counted one foot of rings, with the result following: First count, 66 feet from roots, 232 rings; second count, 196 feet from roots, 254 rings; third count, 210 feet from roots, 276 rings. The diameter of the tree at each place must be considéred, and is as follows: First place of counting, 12 feet; second place, 11 feet, and the third, 10 feet. Now the estimated whole number of rings (age), at each place is obtained by calculating, viz:

232x6,	semi-diameter	at 1st	place,	1,392	Rings.
254x5½,	"	" 2d	"	1,342	"
276x5,	"	" 3d	"	1,380	"

Adding these products and dividing by the number of counts, the average of rings (age), is 1,371⅓ years only. Probable full age at base, 1,500 years.

One oft-repeated story is true, however; that of a passage through a part of his body large enough to admit horsemen. This passage burnt out of his heart commences at a point 66 feet from the roots and extends 120 feet, coming out where was once a knot-hole, now enlarged by relic seekers to a wide doorway. I saw several ladies ride horses of medium size through this wooden tunnel, and one day while passing, riding one of my horses and leading the other packed with bulky specimens I turned into the cavity and rode safely through. The ceiling overhead is four to six feet thick, so the grand promenade for visitors above is perfectly safe.

South Park Grove.—This grove contains about 500 trees, some of them of the largest class. One, the home of "Trapper Smith," is a vast swollen trunk at base, 90 feet in circuit and 30 in diameter. The "Livery Stable." which has received 22 horses at a time into its hollowed base, is 84 feet in circuit, and the "Primitive Church" is 81 feet. A fallen tree is 15 feet in diameter 20 feet from the roots. A cavity is burnt in it sufficient to comfortably shelter 25 or 30 horses, or to afford the passage of a Concord coach and its four-horse team for over 200 feet. Another, near "Trapper Smith's Cabin," and used by the tourists as a temporary shelter for their horses, is 16 feet in diameter and hollowed for a long way. These are certainly fair samples of the largest *Sequoias* both living and fallen, and the dimensions above given do not materially differ from some published statements, but counts and estimates of their rings reveal only 1,200 to 1,500 in number.

Other groves visited afforded exactly corroborative evidence, that though the dimensions, being easily determined, are often given accurately, the age has been generally grossly exaggerated.

As late as February last the writer saw a specimen of *Sequoia* in the Central Pacific railroad collection at San Francisco for the Centennial exhibition, which was sent from the Calaveras Mammoth Grove, and is marked "four thousand years old."

Now I firmly believe with Dr. Gray that this is an "over-statement," and, as I said, I am glad that it is such. Let India with her banyan tree—which by the way is a mass of trunks, not a single one—take the palm for growth of 4,000 years, let African baobab trees reach back still nearer to the Garden of Eden, let Palestine boast of her cedars of Lebanon growing since Moses' time, and let Australia present upon every exploration by the close observer trees of undeterminable ancient origin; all these trees of the old world almost, without exception, are slow-growing, fine-grained, stunted, gnarled, decrepit, unsightly old relics of past ages—only interesting because of their great age.

The famous baobab, *Adansonia digitata*, is the largest in circuit at base of any tree yet known, but it is only 70 to 80 feet high. The cedar of Lebanon, with annual layers, so fine that a lens is necessary to distinguish them, is similar in shape, with round-headed top.

Now all observers admit that the California Big Trees, with their vast straight fluted columns, 200 to 300 feet high, and their immense crowns of finely divided, evergreen branches, are the most symmetrical and magnificent in form, the tallest and actually the largest in dimensions of any yet known in all the world. How satisfying to the pride of a true American, to reflect upon the inference derived from this comparatively new fact—formerly a most unwelcome one to the thoughtless, insomuch that loyal Californians prove their loyalty by declaring their belief in the great age of the Big Trees; hence the warfare to which Dr. Gray refers, and the great but pardonable assistance given to the erring side by eminent writers through their praiseworthy love of country.

But science always searches for the truth. Sooner or later the facts will come to be believed and they are always best. And the truth, in this case so long repressed, is most welcome because it gives foundation for the most reasonable and enthusiastic loyalty. Why, these grand giant trees are mere vigorous saplings yet, only 1,200 to 1,500 years old! Ages hence full-grown trees may be seen 50 feet in diameter and 1,000 feet high, only limited by the proximity of brother trees and the depth of the valleys where found. We can't expect them to be so unneighborly as to choke their brothers to death, nor to rise above the leveling winds that sweep over the canons of the Sierra. So let the old world pride itself upon old things, old nations, old creeds, old arts, old customs, old monuments; we of Amerca rejoice that this is a new, unfinished world, with young yet colossal vegetable growths, strange yet beautiful animal forms, modern yet matchless peoples, adolescent yet full-fruit-bearing institutions, unprecedented yet unimaginable destinies!

> "For still the new t anscends the old,
> In deeds and wonders manifold."

GRAY'S FLORA OF NORTH AMERICA.—All the botanists will accept with sincere thankfulness this beginning of the new "Flora." A beginning at the middle, indeed, yet not a "beginning of the end;" but so that the work be done the order of its doing may well be left to his choice who is looked upon with one accord as the only one competent for its proper performance. If a preference might be expressed in regard to it it would doubtless be that Dr. Gray would see fit to give next a revision of what is by far the most intricate and difficult of all the orders of our flora, viz: the *Compositæ*. No portion of the proposed volumes is more needed by botanists or will be more acceptable, and in none is Dr. Gray more truly the sole authority. As he has recently gone over a considerable portion of the ground in his work for the "Botany of California,' this would be all the easier for him.

In looking over the present issue, some peculiarities of arrangement at once attract attention. There are no artificial keys either to genera or species. Under each order the ordinal character is followed by a synopsis of the genera, with concise but essentially complete characters, grouped together not only by sub-orders or tribes (where such exist), but also by minor subdivisions, and under characteristic headings, thus avoiding repetition, and leading most directly to the genus sought. When the genus itself is taken up, only such other details, general remarks and synonomy are given as may be needed to fully supplement the previous description. A comparison with the published volumes of "Torrey and Gray's Flora" will make the improvement of plan manifest, and show the appropriateness of the title which Dr. Gray has adopted. The same synoptical method, however, is not carried out in the treatment of species, though they are similarly grouped under common headings so far as they have essential characters in common. The specific descriptions themselves are full, but without redundancy or